

## CLAIMS

What is claimed is:

1. A corner fitting for constructing an air handling unit, the corner fitting comprising:
  - three mutually substantially perpendicular members having abutting sides forming an inside corner;
  - a base disposed adjacent to the three mutually substantially perpendicular members, the base comprising three symmetrical portions defined by the abutting sides of the adjacent members, each symmetrical portion of the base comprising:
    - a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to one member and the second end of the first segment extending away from the one member;
    - a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to another member substantially perpendicular to the one member and the second end of the second segment extending away from the another member;
    - a plane of symmetry coincident with a corner defined by the one member and the another member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry; and
    - a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the one member, the other member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length; and
    - a leg extending from each closed geometry away from the inside corner.
2. The corner fitting of claim 1 wherein the corner fitting is of unitary construction.
3. The corner fitting of claim 1 wherein each symmetrical portion of the base comprises:
  - a first channel adjacent the second end of the first segment;
  - a second channel adjacent the second end of the second segment; and

wherein the first and the second channels are configured and disposed to receive a corner cap having three mutually perpendicular portions, each mutually perpendicular portion of the corner cap overlying one symmetrical portion of the base.

4. The corner fitting of claim 3 wherein each mutually perpendicular portion of the corner cap comprises:
  - opposed lips that engage the first and the second channels of each symmetrical portion of the base; and
  - at least one rib that abuts one symmetric portion of the base to secure the corner fitting cap at a predetermined distance from the corner fitting.
5. The corner fitting of claim 4 wherein at least one closed geometry is formed between each symmetrical portion of the base and one mutually perpendicular portion of the corner cap to provide enhanced insulative performance.
6. The corner fitting of claim 4 wherein each mutually perpendicular portion of the corner cap has opposed shoulders, the shoulders of adjacent mutually perpendicular portions forming a corner.
7. A structural member for constructing an air handling unit, the structural member comprising:
  - two substantially perpendicular members having abutting sides forming an inside corner;
  - a base disposed adjacent to the two substantially perpendicular members, the base comprising:
    - a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to one member and the second end of the first segment extending away from the one member;
    - a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to another member substantially perpendicular to the one member and the second end of the second segment extending away from the another member;

a plane of symmetry coincident with a corner defined by the one member and the another member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry; and

a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the one member, the other member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length.

8. The structural member of claim 7 wherein the structural member is of unitary construction.
9. The structural member of claim 7 wherein the base comprises:
  - a first channel adjacent the second end of the first segment;
  - a second channel adjacent the second end of the second segment; and
  - wherein the first and the second channels are configured and disposed to receive a cap, the cap overlying the base.
10. The structural member of claim 9 wherein the cap comprises:
  - opposed lips that engage the first and the second channels of the base; and
  - at least one rib that abuts the base to secure the cap at a predetermined distance from the structural member.
11. The structural member of claim 10 wherein at least one closed geometry is formed between the base and the cap to provide enhanced insulative performance.
12. A framework for constructing an air handling unit compartment, the framework comprising:
  - a plurality of corner fittings, each corner fitting of the plurality of corner fittings comprising:
    - three mutually substantially perpendicular members having abutting sides forming an inside corner;
    - a base disposed adjacent to the three mutually substantially perpendicular members, the base comprising three symmetrical portions defined by the abutting sides of the adjacent members, each symmetrical portion of the base comprising:

a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to one member and the second end of the first segment extending away from the one member;

a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to another member substantially perpendicular to the one member and the second end of the second segment extending away from the another member;

a plane of symmetry coincident with a corner defined by the one member and the another member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry; and

a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the one member, the other member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length; and

a leg extending from each closed geometry away from the inside corner;

a plurality of structural members being interconnectable with the plurality of structural fittings to form the framework; and

wherein each leg of a corner fitting of the plurality of corner fittings being configured to receive an end of a structural members to connect the structural members to the corner member.

13. The framework of claim 12 wherein each of the plurality of corner fittings and structural fittings are of unitary construction.

14. The framework of claim 12 wherein each symmetrical portion of the base comprises:

a first channel adjacent the second end of the first segment;

a second channel adjacent the second end of the second segment;

wherein the first and the second channels are configured and disposed to receive a corner cap having three mutually perpendicular portions, each mutually perpendicular portion overlying one symmetrical portion of the base; and

a plurality of caps, each of the plurality of structural members being configured and disposed to receive one cap of the plurality of caps, each cap of the plurality of caps overlying one structural member of the plurality of structural members.

15. The framework of claim 14 wherein at least one first closed geometry is formed between each symmetrical portion of the base of the corner fitting of the plurality of corner fittings and one mutually perpendicular portion of the corner cap of the plurality of corner caps;

at least one second closed geometry is formed between each of the plurality of structural members and the plurality of caps; and

wherein the at least one first closed geometry and the at least one second closed geometry providing enhanced insulative performance.

16. An air handling unit construction comprising:

a plurality of corner fittings, each corner fitting of the plurality of corner fittings comprising:

three mutually substantially perpendicular members having abutting sides forming an inside corner;

a base disposed adjacent to the three mutually substantially perpendicular members, the base comprising three symmetrical portions defined by the abutting sides of the adjacent members, each symmetrical portion of the base comprising:

a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to one member and the second end of the first segment extending away from the one member;

a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to another member substantially perpendicular to the one member and the second end of the second segment extending away from the another member;

a plane of symmetry coincident with a corner defined by the one member and the another member, wherein the first segment and the second

segment being symmetrical with each other about the plane of symmetry;  
and

a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the one member, the other member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length; and

a leg extending from each closed geometry away from the inside corner; and  
a plurality of structural members being interconnectable with the plurality of corner fittings to form a framework;

wherein each leg of a corner fitting of the plurality of corner fittings being configured to receive an end of a structural members to connect the structural members to the corner fitting, the structural members comprising:

two substantially perpendicular members having abutting sides forming an inside corner;

a base disposed adjacent to the two substantially perpendicular members, the base comprising:

a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to one member and the second end of the first segment extending away from the one member;

a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to another member substantially perpendicular to the one member and the second end of the second segment extending away from the another member;

a plane of symmetry coincident with a corner defined by the one member and the another member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry;  
and

a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment,

the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the one member, the other member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length; and a plurality of panels each being received by a frame of the plurality of frames to form an enclosed structure, each of the plurality of panels having an edge frame, the edge frame comprising:

- a base having a first end and a second end opposite the first end;

- a first leg extending from the first end;

- a second leg opposite the first leg extending from the second end;

- a retention device extending from the base between the first leg and the second leg, the retention device being configured to secure an end of an insulated panel between at least one of the first leg and the retention device and the second leg and the retention device and the first leg and the second leg;

- a first seal extending from the first end substantially opposite the first leg;

- a second seal extending from the second leg away from the retention device;

and

wherein the first and second seals are each disposed to provide a seal with sealing surfaces of the frame; and

a floor panel, the floor panel comprising:

- a lower portion, the lower portion including a base having upwardly extending walls forming a periphery of the base; and

- an upper portion supported by the lower portion, the upper portion including a floor having a drain at one end of the floor, the floor having interconnected walls forming a periphery of the floor, the walls extending outwardly to flanges supported from beneath by the walls of the lower portion, the wall of the upper portion adjacent the drain being of greater height than the wall opposite the drain, the floor including opposed raised portions filled with a material having a low thermal conductivity, a plurality of slots being formed in the raised portions to facilitate the flow of fluid contacting the upper portion toward the drain.

17. The air handling unit construction of claim 16 wherein each of the plurality of corner fittings and structural members are of unitary construction.
18. The air handling unit construction of claim 16 wherein each symmetrical portion of the base comprises:
- a first channel adjacent the second end of the first segment;
  - a second channel adjacent the second end of the second segment;
  - wherein the first and the second channels are configured and disposed to receive a corner cap having three mutually perpendicular portions, each mutually perpendicular portion overlying one symmetrical portion of the base; and
  - a plurality of caps, each of the plurality of structural members being configured and disposed to receive one cap of the plurality of caps, each cap of the plurality of caps overlying one structural member of the plurality of structural members.
19. The air handling unit construction of claim 18 wherein at least one first closed geometry is formed between each symmetrical portion of the base of the corner fitting of the plurality of corner fittings and one mutually perpendicular portion of the corner cap of the plurality of corner caps;
- at least one second closed geometry is formed between each of the plurality of structural members and the plurality of caps; and
  - wherein the at least one first closed geometry and the at least one second closed geometry providing enhanced insulative performance.
20. The air handling unit construction of claim 18 having a splice fitting interposed between adjacent ends of opposed in-line structural members, the splice fitting configured to receive the adjacent ends of the in-line structural members for providing a contiguous length of structural members between opposed corner fittings, the splice fitting also configured to receive one end of each of a pair of splice members substantially transverse to the in-line structural members, the splice members being connectable between adjacent splice fittings, the splice fitting comprising:
- a pair of substantially perpendicular members forming an inside corner, a base disposed adjacent to the pair of substantially perpendicular members comprising an



in-line portion and a pair of substantially transverse portions each substantially perpendicular to the in-line portion, the in-line portion comprising:

- a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to one member and the second end of the first segment extending away from the one member;

- a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to the other member substantially perpendicular to the one member and the second end of the second segment extending away from the other member;

- a plane of symmetry coincident with a corner defined by the one member and the other member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry; and

- a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the one member, the other member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length; and

- a leg extending from each closed geometry away from the inside corner to receive one end of adjacent in-line structural members;

one substantially transverse portion of the pair of substantially transverse portions comprising:

- a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to one member substantially perpendicular to the one member and the second end of the first segment extending away from the other member;

- a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to the one member substantially perpendicular to the one member and the second end of the second segment extending away from the other member;

a plane of symmetry perpendicular to the corner defined by the one member and the other member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry; and

a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the one member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length; and

the other substantially transverse portion of the pair of substantially transverse portions comprising:

a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to the other member and the second end of the first segment extending away from the one member;

a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to the other member substantially perpendicular to the other member and the second end of the second segment extending away from the one member;

a plane of symmetry perpendicular to the corner defined by the one member and the other member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry; and

a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the other member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length.

21. A splice joint for constructing an air handling unit compartment having a framework, the framework including a plurality of corner fittings being interconnectable with a plurality of structural members, the splice joint comprising:

a splice fitting interposed between adjacent ends of opposed in-line structural members, the splice fitting configured to receive the adjacent ends of the in-line structural members for providing a contiguous length of structural members between opposed corner fittings, the splice fitting also configured to receive one end of each of a pair of splice members substantially transverse to the in-line structural members, the splice members being connectable between adjacent splice fittings, the splice fitting comprising:

a pair of substantially perpendicular members forming an inside corner, a base disposed adjacent to the pair of substantially perpendicular members comprising an in-line portion and a pair of substantially transverse portions, the in-line portion comprising:

a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to one member and the second end of the first segment extending away from the one member;

a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to the other member substantially perpendicular to the one member and the second end of the second segment extending away from the other member;

a plane of symmetry coincident with a corner defined by the one member and the other member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry; and

a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the one member, the other member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length; and

one substantially transverse portion of the pair of substantially transverse portions comprising:

a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to one member and the second end of the first segment extending away from the other member;

a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to the one member substantially perpendicular to the one member and the second end of the second segment extending away from the other member;

a plane of symmetry perpendicular to the corner defined by the one member and the other member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry; and

a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the second segment, wherein the first segment, the second segment, the one member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length; and

the other substantially transverse portion of the pair of substantially transverse portions comprising:

a first segment having a first end and a second end opposite the first end, the first end of the first segment connected to the other member and the second end of the first segment extending away from the one member;

a second segment having a first end and a second end opposite the first end, the first end of the first segment connected to the other member substantially perpendicular to the other member and the second end of the second segment extending away from the other member;

a plane of symmetry perpendicular to the corner defined by the one member and the other member, wherein the first segment and the second segment being symmetrical with each other about the plane of symmetry; and

a closing portion having a first end and a second end, the first end of the closing portion being coincident with the second end of the first segment, the second end of the closing portion being coincident with the second end of the

second segment, wherein the first segment, the second segment, the other member and the closing portion defining a closed geometry, the closed geometry extending for a predetermined length.

22. An edge frame for an insulated panel used in constructing an air handling unit, the edge frame comprising:

- a base having a first end and a second end opposite the first end;
- a first leg extending from the first end;
- a second leg extending from the second end substantially parallel to the first leg;
- a retention device extending from the base between the first leg and the second leg, the retention device being configured to secure an end of an insulated panel between at least one of the first leg and the retention device and the second leg and the retention device and the first leg and the second leg;
- a first seal extending from the first end substantially opposite the first leg;
- a second seal extending from the second leg away from the retention device; and
- wherein the first and second seals are each disposed to provide a seal with sealing surfaces of a frame of the air handling unit.

23. The edge frame of claim 22 wherein the first seal is a blade seal.

24. The edge frame of claim 22 wherein the second seal is a flared seal.

25. The edge frame of claim 22 wherein the edge frame is of unitary construction.

26. The edge frame of claim 25 wherein the first and second seals having flexible properties and the remainder of the edge frame having substantially rigid properties.

27. The edge frame of claim 25 wherein the edge frame is composed of a substantially flexible material.

28. A floor panel for constructing an air handling unit, the floor panel comprising:

- a lower portion, the lower portion including a base having upwardly extending walls forming a periphery of the base;
- an upper portion supported by the lower portion, the upper portion including a floor having a drain at one end of the floor, the floor having interconnected walls forming a periphery of the floor, the walls extending outwardly to flanges supported

from beneath by the walls of the lower portion, the wall of the upper portion adjacent the drain being of greater height than the wall opposite the drain, the floor including opposed raised portions filled with a material having a low thermal conductivity, a plurality of slots being formed in the raised portions to facilitate the flow of fluid contacting the upper portion toward the drain.

29. A method of assembling an air handling unit, the steps comprising:

providing a plurality of corner fittings, structural members, corner caps, caps and panels, each corner fitting of the plurality corner fittings configured to receive ends of three structural members of the plurality of structural members;

interconnecting the plurality of corner fittings with the plurality of structural members to form a framework having a plurality of frames;

assembling one corner cap of the plurality of corner caps to each corner fitting of the plurality of corner fittings, each corner cap of the plurality of corner caps overlying one corner fitting of the plurality of corner fittings;

assembling one cap of the plurality of caps to each structural member of the plurality of structural members, each cap of the plurality of caps overlying one structural member of the plurality of structural members; and

installing one panel of the plurality of panels in each frame of the plurality of frames, the periphery of each panel of the plurality of panels overlying a portion of the corner caps of the plurality of corner caps and the caps of the plurality of caps overlying the structural members of the plurality of structural members and the corner fittings of the plurality of corner fittings defining each frame of the plurality of frames.